

# ROSE LAKE GENERAL STORE (PWSNO 1280276) SOURCE WATER ASSESSMENT REPORT

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March 3, 2003



## State of Idaho Department of Environmental Quality

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## **SOURCE WATER ASSESSMENT FOR ROSE LAKE GENERAL STORE**

Under the Federal Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the Act. The Department of Environmental Quality is completing the assessments for all Idaho public drinking water systems. The assessment for your drinking water source is based on well construction characteristics; site specific sensitivity factors associated with the aquifer the water is drawn from; a land use inventory inside the well recharge zone; and water quality history. For transient water systems like Rose Lake General Store, recharge zones were generally delineated as a 1000-foot fixed radius around the wells.

This report, *Source Water Assessment for Rose Lake General Store* describes factors used to assess susceptibility to contamination. The analysis relies on information from the well log; an inventory of land use inside the delineation boundaries, well site characteristics, potential contaminant sites identified through a Geographic Information System database search; and information from the public water system file. The ground water susceptibility analysis worksheet for Rose Lake General Store is attached.

Taken into account with local knowledge and concerns, this assessment should be used as a planning tool to develop and implement appropriate protection measures for this system. **The results should not be used as an absolute measure of risk and are not intended to undermine the confidence in your water system.**

**Well Construction.** The Rose Lake General Store water system serves 2 homes and a convenience store on Highway 3 just south of Interstate 90. A 36 foot deep well that was constructed in 1961 supplies drinking water for the system. The well is located in an undrained concrete lined pit. The 4-inch steel well casing, fitted with an unvented sanitary well cap, extends only an inch above the floor of the pit. Access to the pit is at ground level. When inspected in 1997, the wellhead was submerged. Current Idaho Department of Water Resources standards do not allow well pits. Well casings must extend a minimum of 12" above grade to protect them from flooding (IDAPA37.03.09).

The well casing terminates 24 feet below ground in a water-bearing layer of coarse sand and gravel. Water was first encountered in a seam of gravel mixed with clay 6 to 8 feet below the surface. 12 feet of clay lying over 2 feet of sand and a foot of hardpan separate the upper and lower water tables. The well produces about 15 gallons per minute. The well log contains no information about the depth or composition of the annular seal.

**Well Site Characteristics.** Hydrologic sensitivity scores are derived from information on the well log and from the soil drainage classification inside the recharge zone delineated for your well. Soils covering about 77 per cent of the recharge zone delineated for Rose Lake General Store are moderately well to well drained. Soils in these drainage classifications are less protective of the ground water than soils that drain slowly. Clay predominates in the soil column above the water table at the Rose Lake General Store well site, but the well is very shallow.

**Potential Contaminant Inventory.** The 1000-foot radius recharge zone delineated for the Rose Lake General Store well covers a wooded area with some commercial development fronting Highway 3. As a trucking route, the highway is a potential source of every class of regulated contaminant. Other potential sources of contamination inside the delineation boundaries are the fuel storage tanks about 100 feet south east of the well and Fourth of July Creek. Because the well is so shallow, it is potentially influenced by surface water. Further testing is required to make a final determination.

An unused dug well, about 12 feet deep, is adjacent to the drinking water well. The access to both wells was covered with rotten wood and pieces of metal roofing when the system was inspected in 1997. The dug well inside the sanitary setback is a potential conduit between the surface and ground water.

Septic systems for the store and adjoining property were not counted as significant potential sources of contamination because they are outside of the sanitary setback zone and serve fewer than 10 connections.

**Water Quality History.** Rose Lake General Store has a good water quality history despite deficiencies in well construction and upkeep. In the period from July 1996 through June 2002, one quarterly sample tested positive for total coliform bacteria. The presence of bacteria was not confirmed by follow up testing. Annual nitrate tests for the same years show concentrations increasing from 0.077 mg/l to 0.116 mg/l. The Maximum Contaminant Level for Nitrate is 10 mg/l.

**Susceptibility to Contamination.** An analysis of the Rose Lake General Store well, incorporating information from the public water system file, and the potential contaminant inventory, ranked the well at high risk for microbial contamination. The risk relative to other classes of regulated contaminants is moderate. The complete ground water susceptibility work sheet for your system is on pg. 6 of this report. Formulas used to compute final scores and susceptibility rankings are at the bottom of the worksheet.

**Source Water Protection.** This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

The Rose Lake General Store was not in compliance with Idaho Rules for Public Drinking Water systems when inspected in 1997. Correspondence in the Public Drinking Water System file does not indicate whether required improvements have been made:

- Extending the well casing a minimum of 1 foot above finished grade and flood level
- Fitting the casing with a watertight, vented well cap or sanitary well seal
- Filling in the well pit and grading the ground to slope away from the well
- Properly abandoning the dug well
- Ensuring that no hazardous substances are stored within 50 feet of the well.

These measures are necessary for reducing the risk of the well becoming contaminated. In the long run, it is cheaper to do preventive maintenance than to replace a water source damaged through neglect.

There are a number of voluntary drinking water protection measures the Rose Lake General Store can implement as well. Every system should develop an emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website to guide systems through the emergency planning process.

Drinking water protection partnerships with landowners businesses and in the recharge zone should also be established. Some of them may not be aware that their property is in a sensitive area where household or business practices could have a negative impact on public drinking water supplies. The Rose Lake General Store should investigate ground water stewardship programs like Home\*A\*Syst. These programs are designed to help well owners assess everyday activities for their potential impact on drinking water quality. Topics include petroleum product storage, septic system maintenance, handling and storing lawn and household chemicals and similar activities. Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

**Assistance.**

Public water suppliers and users may call the following IDEQ offices with questions about this assessment and to request help with drinking water protection planning.

Coeur d'Alene Regional DEQ Office (208) 769-1422

State IDEQ Office (208) 373-0502

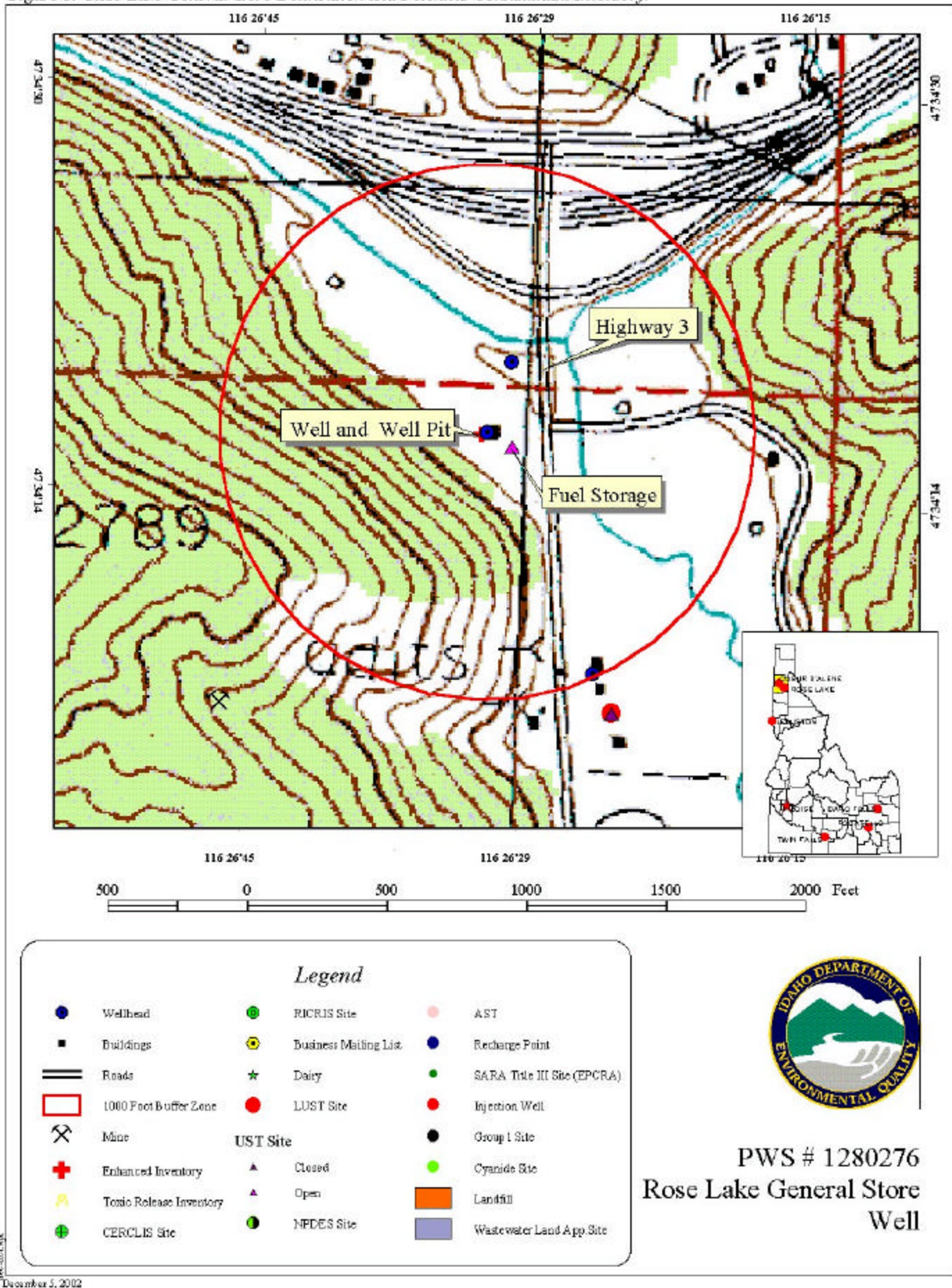
DEQ Website: [www.deq.state.id.us](http://www.deq.state.id.us)

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper of the Idaho Rural Water Association (208) 343-7001 for assistance with drinking water protection strategies.

Idaho Rural Water Association Website: [www.idahoruralwater.com](http://www.idahoruralwater.com)

Home \* A \* Syst Website: [www.uwex.edu/homeasyst](http://www.uwex.edu/homeasyst)

Figure 1. Rose Lake General Store Delineation and Potential Contaminant Inventory.





## Ground Water Susceptibility

Public Water System Name :

ROSE LAKE GENERAL STORE

Well # :

WELL 1

Public Water System Number :

1280276

12/5/02 9:07:59 AM

1. System Construction		SCORE			
Drill Date	4/11/61				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	YES 1997				
Well meets IDWR construction standards	NO	1			
Wellhead and surface seal maintained	NO	1			
Casing and annular seal extend to low permeability unit	Casing yes. Seal unknown	1			
Highest production 100 feet below static water level	NO	1			
Well protected from surface runoff	NO	1			
<b>Total System Construction Score</b>		<b>5</b>			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
Vadose zone composed of gravel, fractured rock or unknown	NO	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
<b>Total Hydrologic Score</b>		<b>5</b>			
3. Potential Contaminant / Land Use		IOC	VOC	SOC	Microbial
		Score	Score	Score	Score
Land Use	SUBURBAN/COMERCIAL	1	1	1	1
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Sanitary Setback	YES. Undrained well pit, adjacent dug well	NO	NO	NO	YES
<b>Potential Contaminant Source/Land Use Score</b>		<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
Potential Contaminant / Land Use - 1000-Foot Radius					
Contaminant sources present (Number of Sources)	YES. Fuel Storage, Highway 3, Surface Water	1	2	2	3
(Score = # Sources X 2 ) 8 Points Maximum		2	4	4	6
Sources of Class II or III leacheable contaminants or Microbials	YES	1	2	2	
4 Points Maximum		1	2	2	
1000-Foot Radius contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use 1000-Foot Radius	Less Than 25% Agricultural Land	0	0	0	0
<b>Total Potential Contaminant Source / Land Use Score - 1000-Foot Radius</b>		<b>3</b>	<b>6</b>	<b>6</b>	<b>6</b>
<b>Cumulative Potential Contaminant / Land Use Score</b>		<b>4</b>	<b>7</b>	<b>7</b>	<b>7</b>
<b>4. Final Susceptibility Source Score</b>		<b>11</b>	<b>12</b>	<b>12</b>	<b>13</b>
<b>5. Final Well Ranking</b>		Moderate	Moderate	Moderate	High

The final scores for the susceptibility analysis were determined using the following formulas:

- 1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.27)
- 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

### Final Susceptibility Ranking:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

## POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

**AST (Aboveground Storage Tanks)** – Sites with aboveground storage tanks.

**Business Mailing List** – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

**CERCLIS** – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as ? Superfund? is designed to clean up hazardous waste sites that are on the national priority list (NPL).

**Cyanide Site** – DEQ permitted and known historical sites/facilities using cyanide.

**Dairy** – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

**Deep Injection Well** – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

**Enhanced Inventory** – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

**Floodplain** – This is a coverage of the 100year floodplains.

**Group 1 Sites** – These are sites that show elevated levels of contaminants and are not within the priority one areas.

**Inorganic Priority Area** – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

**Landfill** – Areas of open and closed municipal and non-municipal landfills.

**LUST (Leaking Underground Storage Tank)** – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

**Mines and Quarries** – Mines and quarries permitted through the Idaho Department of Lands.)

**Nitrate Priority Area** – Area where greater than 25% of wells/springs show nitrate values above 5mg/l.

**NPDES (National Pollutant Discharge Elimination System)** – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

**Organic Priority Areas** – These are any areas where greater than 25 % of wells/springs show levels greater than 1% of the primary standard or other health standards.

**Recharge Point** – This includes active, proposed, and possible recharge sites on the Snake River Plain.

**RICRIS** – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

**SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities)** – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

**Toxic Release Inventory (TRI)** – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

**UST (Underground Storage Tank)** – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

**Wastewater Land Applications Sites** – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

**Wellheads** – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

**NOTE:** Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.